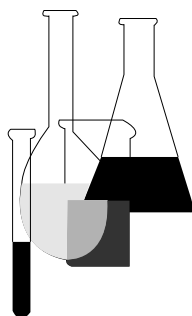




Residue Chemistry Test Guidelines

OPPTS 860.1400 Water, Fish, and Irrigated Crops



INTRODUCTION

This guideline is one of a series of test guidelines that have been developed by the Office of Prevention, Pesticides and Toxic Substances, United States Environmental Protection Agency for use in the testing of pesticides and toxic substances, and the development of test data that must be submitted to the Agency for review under Federal regulations.

The Office of Prevention, Pesticides and Toxic Substances (OPPTS) has developed this guideline through a process of harmonization that blended the testing guidance and requirements that existed in the Office of Pollution Prevention and Toxics (OPPT) and appeared in Title 40, Chapter I, Subchapter R of the Code of Federal Regulations (CFR), the Office of Pesticide Programs (OPP) which appeared in publications of the National Technical Information Service (NTIS) and the guidelines published by the Organization for Economic Cooperation and Development (OECD).

The purpose of harmonizing these guidelines into a single set of OPPTS guidelines is to minimize variations among the testing procedures that must be performed to meet the data requirements of the U. S. Environmental Protection Agency under the Toxic Substances Control Act (15 U.S.C. 2601) and the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136, *et seq.*).

Final Guideline Release: This guideline is available from the U.S. Government Printing Office, Washington, DC 20402 on *The Federal Bulletin Board*. By modem dial 202-512-1387, telnet and ftp: fedbbs.access.gpo.gov (IP 162.140.64.19), internet: <http://fedbbs.access.gpo.gov>, or call 202-512-0132 for disks or paper copies. This guideline is also available electronically in ASCII and PDF (portable document format) from the EPA Public Access Gopher (gopher.epa.gov) under the heading "Environmental Test Methods and Guidelines."

OPPTS 860.1400 Water, fish, and irrigated crops.

(a) **Scope**—(1) **Applicability.** This guideline is intended to meet testing requirements of both the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. 136, et seq.) and the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301, et seq.)

(2) **Background.** The source material used in developing this harmonized OPPTS guideline is OPP 171-4 Results of Tests on the Amount of Residue Remaining, Including a Description of the Analytical Methods Used (Pesticide Assessment Guidelines, Subdivision O: Residue Chemistry, EPA Report 540/9-82-023, October 1982). This OPPTS guideline should be used in conjunction with OPPTS 860.1000, Background.

(b) **Purpose.** These studies are used by the Agency to determine the levels of pesticide residues in water, fish, and irrigated crops when products are applied directly to water to control aquatic pests such as weeds or insects (e.g. hydrilla, mosquitoes). The data are used in dietary risk assessment and, in the case of fish and irrigated crops, to establish tolerances for enforcement purposes.

(c) **Introduction.** (1) Any use of pesticides in or near aquatic sites (i.e. ponds, lakes, impoundments, and fields typically flooded and drained as a part of normal agricultural practice, before, during, or after treatment with pesticides) may lead to residues in water, fish and shellfish, irrigated crops, and meat, milk, poultry, and eggs. Adequate data are needed for each of these commodities to demonstrate both the nature of the residue and the level of residues resulting from the maximum proposed use. Because of the nature of aquatic uses, emphasis must be placed on the use of practical use restrictions which will be followed by the applicator.

(2) The design of field studies to demonstrate the fate of the pesticide in the aquatic environment must be directly related to the typical use pattern and restrictions imposed on the use. In the case of fields treated either before or after flooding, the timing, volume, and release of the flood water as dictated by normal agricultural practice must be considered in the field study design. As another example, use in impounded bodies which are completely under the control of the user may be subject to practical label restrictions that would preclude livestock watering, fishing, or use for drinking or irrigation for a specified time period after treatment. On the other hand, such restrictions would not be practical for use of a pesticide in a river system. In this latter type of use, restrictions against treatment within a given distance of irrigation or domestic water intakes may be practical.

(3) In general, separate and distinct protocols will be required for still waters (lakes, ponds), flowing water, irrigation conveyance systems, fields that are flooded and drained, and tidal estuaries. The fate of the compound must be demonstrated with respect to rate of dispersion down-

stream, degradation, volatilization, or sorption by plants or hydrosol. Degradation products in water should be identified and may need to be quantified.

(d) **Water.** Residue data are required for any water as described above in the various aquatic systems that either are directly or may be inadvertently impacted by a pesticide use (i.e. pond, field, drainage canal, river, estuary). The data collected must show the highest level likely to occur in water. If a monitoring scheme is used, it should include samples taken prior to treatment with pesticides and then periodically to show the gradual decline of the pesticide residues.

(e) **Fish.** (1) A fish metabolism study on a predator (e.g. bass) or bottom feeder (e.g. catfish) is required when fish may be exposed to the pesticide or its degradation products. A shellfish metabolism study is not required. If no ^{14}C is detected in fish in a static metabolism study the following fish residue studies are not required. Shellfish residue studies will still be required, however, with analysis for the parent pesticide.

(2) The fish and shellfish residue studies may be of various types, depending on the aquatic system involved. Controlled exposure for appropriate time intervals may be carried out under static or dynamic conditions in aquaria, or the specimens may be exposed in natural sites if the treated area can be isolated, such as by cages. Field studies under natural conditions are preferred. Samples for analyses should reflect the fish commodity definition under paragraph (g)(1) of this guideline. The proposal for tolerances in fish should be expressed on the basis of the edible portion. For fish, residue data are needed for both bottom feeders (e.g. catfish) and predators (e.g. bass). For shellfish, data are needed for both molluscs (e.g. clams, oysters) and crustaceans (e.g. shrimp, crabs). If use in estuarine areas is planned, data on whole fish protein concentrate, and smoked, canned, or other processed fish products are needed to determine whether a food additive regulation is necessary.

(f) **Irrigated crops.** Experiments to show possible residues in crops irrigated with treated water may utilize the crop grouping scheme shown in 40 CFR 180.41. Residue data for representative crops in each crop group are normally required. If it has been determined that residues are likely to occur in water when it could be ingested by livestock, animal feeding studies must be carried out as described in OPPTS 860.1480.

(g) **References.** The following references should be consulted for additional background material on this test guideline.

(1) Pesticide Analytical Manual (PAM). Volume I. Food and Drug Administration, Washington, DC. Available from National Technical Information Service, Springfield, VA 22161 (1994)

(2) Pesticide Analytical Manual (PAM). Volume II. Food and Drug Administration, Washington, DC. Available from National Technical Information Service, Springfield, VA 22161 (1994).